AMENDMENTS TO THE SPECIFICATION

Please amend the paragraph beginning at page 13, line 22, as follows:

FIG. 4 is further embodiment of the present invention ~~according to Claim 7~~, in which as the connection element the output-take-out shaft 7 is provided not to the plunger 1 but to the amplitude control spindle 9. In this case also, almost the same motions can be obtained as those of the above-mentioned linear oscillator and, besides, it is possible to dispose opposite to that shown in FIG. 1 the position of the magnetic circuit portion including such as the permanent magnet 5, which is usually supposed to have a large mass, thus enhancing the gravity position in height of the equipment as a whole and the freedom degree in product designing of, e.g., a distance with respect to the power supply. Also, the light-weighting of the amplitude control spindle 9 directly leads to the increasing of the linear oscillator stroke, so that these two merits can be united easily and, further, a member to be attached to the output-take-out shaft 7 can be designed as part of a mass component of the amplitude control spindle 9, to decrease the initial mass of the amplitude control spindle 9 by that much, thus obtaining a more light-weighted and less vibrated linear oscillator.

Please amend the paragraph beginning at page 14, line 16, as follows:

FIG. 5 shows a still further embodiment of the present invention ~~according to Claim 12~~, in which the thickness of the shield case 10 formed of a magnetic substance is 7% or more of that of an outer diameter of the permanent magnets 40 and 41 and there is formed an air gap between the inner surface of the shield case 10 and the outer surface of the permanent magnets 40 and 41 and also the yokes 20, 21, 30, and 31 to thereby give a sufficient shielding effect, thus obtaining a linear oscillator having no influence on a pace maker etc. In such a case, the shielding effect is improved when at least a portion of a case such as the shield case

10 which faces the electromagnetic part is formed of a magnetic substance and has a thickness of 7% or more of the outer diameter of the permanent magnet.

Please amend the paragraph beginning at page 15, line 4, as follows:

FIG. 6 shows an additional embodiment of the present invention ~~according to Claims 13 and 14~~, in which the yokes 20 and 21 have a triangular cross section so that their surfaces facing the shield case 10 may be a slope. The yokes 20 and 21 and the shield case 10 can be separated from each other to thereby decrease the quantity of magnetic flux running toward the shield case 10, thus improving the driving thrust of the plunger 1, which is the moving part.

Please amend the paragraph beginning at page 15, line 24, as follows:

FIG. 10 shows an additional embodiment of the present invention ~~according to Claim 15~~, in which the shaft 7 passing through the movable plunger 1 is made of a nonmagnetic substance. This leads to an improvement in the thrust and also prevents the leakage of magnetic flux through the shaft 7.

Please amend the paragraph beginning at page 16, line 4, as follows:

FIG. 11 shows an additional embodiment of the present invention ~~according to Claims 15 and 16~~, in which a portion of the shaft 7 which passes through the movable plunger 1 is made of a nonmagnetic substance. A portion of the plunger 1 which is exposed to the outside is made of a highly wear resistant metal material and a portion which is pressed into the plunger 1 is made of a nonmagnetic substance to thereby enable improving the thrust without deteriorating the wear resistance.

Please amend the paragraph beginning at page 16, line 12, as follows:

FIG. 12 shows an additional embodiment of the present invention ~~according to Claim 17~~, in which the yokes 20, 21, 30, and 31 are formed into a stack structure made of a thin sheet to thereby decrease an eddy current loss. The eddy current loss can thus be reduced and its effects increase with the increasing operating frequency. Almost the same effects can be obtained by forming the movable plunger 1 into a stacked structure. Such a structure can be formed also by blanking the material to thereby reduce the manufacturing costs.

Please amend the paragraph beginning at page 16, line 21, as follows:

FIG. 13 shows an additional embodiment of the present invention ~~according to Claim 18~~, in which to reduce the eddy current loss, the movable plunger 1 has a plurality of slits 11 formed therein in the amplitude direction. Those slits 11 can greatly decrease the magnitude of an eddy current when it flows in the axial direction of the plunger 1, which is the main direction in which the magnetic flux runs. In this case also, the plunger 1 can be formed into a stacked structure made of a magnetic substance to thereby mitigate the difficulty in processing and increase the demagnetizing effect due to the iron loss.

Please amend the paragraph beginning at page 17, line 6, as follows:

FIG. 14 shows an additional embodiment of the present invention ~~according to Claim 19~~, in which when the plunger 1 (moving part) having a large diameter portion at both ends, in its reciprocating direction, and a small diameter portion at its center is present at a neutral position, the boundary between the large diameter and small diameter portions roughly agrees with the end face of the yoke 30 and 31 on the side of the coil 5 and both axial end faces of the plunger 1 roughly agree with the end faces of the permanent magnets 40 and 41 on the sides of the yokes 20 and 21 respectively. A detent force roughly at the neutral position can

be reduced to almost zero and so can be ignored in the designing of a relevant resonance system taking into account only the spring coefficient of the spring member, thus facilitating the designing.

Please amend the paragraph beginning at page 17, line 20, as follows:

FIGS. 15 and 16 show an additional embodiment of the present invention ~~according to Claim 20~~, in which the air gap between the outer peripheral surface of the movable plunger 1 and the inner peripheral surface of the yokes 20 and 21 is made non-uniform in a revolution direction. FIG. 16A shows a positional relationship between the plunger and the yoke in a cross-sectional view taken along a line A of FIG. 15, FIG. 16B shows that in a cross-sectional view taken along a line B of FIG. 15, and FIG. 16C shows that in a cross-sectional view taken along a line C of FIG. 15. Since the gap between the plunger 1 and the yokes 20 and 21 changes in revolution direction with changing stroke positions, the plunger 1 can have a revolution directional force with axial movements thereof, thus obtaining a rectilinear motion as well as a revolutionary motion simultaneously.

Please amend the paragraph beginning at page 18, line 10, as follows:

FIG. 17 shows an additional embodiment of the present invention ~~according to Claim 9~~, in which the shield case 10 has on its inner surface a guide (rocking preventing means) 15 for preventing the amplitude control spindle 9 from rocking. In this embodiment the spring member is formed of a coil spring and so the amplitude control spindle 9 may not carry out an ideal rectilinear motion because of a problem of a stress balance and may rock, in which case the amplitude control effect such as vibration absorption cannot sufficiently be obtained, which rocking of the amplitude control spindle 9 can be prevented by the guide 15 to thereby permit the amplitude control spindle 9 to move ideally.

Please amend the paragraph beginning at page 19, line 9, as follows:

FIG. 21 shows an additional embodiment of the present invention ~~according to Claim 21~~, in which a groove 70 formed in the shaft 7 is engaged with a protrusion provided on the shield case 10 to thereby restrict the axial revolution of the shaft 7 and the plunger 1 around that shaft (to provide a revolution restricting means). This mechanism can suppress unnecessary axial revolutions.

Please amend the paragraph beginning at page 19, line 16, as follows:

FIG. 22 shows an additional embodiment of the present invention ~~according to Claim 22~~, in which one end of the spring 60 formed of a coil spring is fixed to the shield case 10 and the other end thereof, to the plunger 1. In this case, the spring 60 formed of a coil spring not only exerts a spring force in the axial direction of the plunger 1 but also provides the plunger 1 with a small-angle reciprocating revolution in the axial direction with axial compression and expansion.In this case, the spring 60 has a spring force also in the revolution direction, thus being able to give also a secured revolutionary motion by matching a revolutionary directional resonance frequency.

Please amend the paragraph beginning at page 20, line 12, as follows:

According to the present invention ~~Claim 8, besides the above-mentioned effects of the invention~~, it is possible to increase the stroke of the moving part.

Please amend the paragraph beginning at page 20, line 15, as follows:

According to the present invention ~~Claim 9, besides the above-mentioned effects of the invention~~, it is possible to suppress the rocking of the amplitude control spindle to thereby

permit the amplitude control spindle to carry out in an ideal rectilinear motion, thus obtaining a sufficient vibration reducing effect.

Please amend the paragraph beginning at page 20, line 20, as follows:

According to the present invention ~~Claim 10, besides the above-mentioned effects of the invention~~, it is possible to increase a stroke of the moving part.

Please amend the paragraph beginning at page 20, line 23, as follows:

According to the present invention ~~Claim 11, besides the above-mentioned effects of the invention~~, it is possible to obtain a light-weighted and easy-to-use linear oscillator.

Please amend the paragraph beginning at page 21, line 1, as follows:

According to the present invention ~~Claim 12, besides the above-mentioned effects of the invention~~, it is possible to obtain such a linear oscillator that has an improved magnetizing effect and has a magnetic leakage level low enough to have no influence on a pace maker etc.

Please amend the paragraph beginning at page 21, line 6, as follows:

According to the present invention ~~Claim 13, besides the above-mentioned effects of the invention~~, it is possible to improve the thrust.

Please amend the paragraph beginning at page 21, line 8, as follows:

According to the present invention ~~Claim 14, besides the above-mentioned effects of the invention~~, it is possible to further improve the thrust.

Please amend the paragraph beginning at page 21, line 11, as follows:

According to the present invention ~~Claim 15, besides the above-mentioned effects of the invention~~, it is possible to improve the thrust and prevent magnetic flux leakage.

Please amend the paragraph beginning at page 21, line 14, as follows:

According to the present invention ~~Claim 16, besides the effects of Claim 15 above~~, it is possible to improve the thrust without deteriorating a wear resistance.

Please amend the paragraph beginning at page 21, line 17, as follows:

According to the present invention ~~Claim 17, besides the above-mentioned effects of the invention~~, it is possible to decrease an eddy current loss.

Please amend the paragraph beginning at page 21, line 20, as follows:

According to the present invention ~~Claim 18, besides the effects of Claim 17 above~~, it is possible to greatly decrease an eddy current using slits when magnetic flux runs in a direction in which the moving part moves.

Please amend the paragraph beginning at page 21, line 24, as follows:

According to the present invention ~~Claim 19, besides the above-mentioned effects of the invention~~, it is possible to reduce a detent force almost to zero at the neutral position to thereby facilitate, e.g. designing of a resonance system.

Please amend the paragraph beginning at page 22, line 3, as follows:

According to the present invention ~~Claim 20, besides the above-mentioned effects of the invention~~, it is possible to generate a revolutionary directional force according to a stroke position to thereby carry out a rectilinear motion and a revolutionary motion simultaneously.

Please amend the paragraph beginning at page 22, line 8, as follows:

According to the present invention ~~Claim 21, besides the above-mentioned effects of the invention~~, it is possible to restrict the revolution of the shaft to thereby suppress unnecessary revolution of the shaft.

Please amend the paragraph beginning at page 22, line 12, as follows:

According to the present invention ~~claim 22, besides the effects of claim 21 above~~, it is possible to restrict revolution without any other member.